# Michael Hightower

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#### **EDUCATION and TRAINING**

1977: New Mexico State University – Master of Science in Civil Engineering
1975: New Mexico State University – Bachelor of Science in Civil Engineering with High Honors

#### PROFESSIONAL EXPERIENCE

1996-Present: Distinguished Member of the Technical Staff - Sandia National Laboratories

• Research, development, and demonstration of critical infrastructure risk assessment to enhance system protection and security and overall system reliability and sustainability. The major focus has been on energy and water infrastructure security and reliability. For the energy infrastructure efforts have included; research on security for energy pipelines and marine energy imports, improving electric power generation system reliability and security risk assessment approaches, and using microgrids to improve electric grid security and reliability. For the water infrastructure efforts have included; development of water infrastructure security risk assessment approaches, research to enhance the ability to treat and use non-traditional water resources such as brackish water, oil and gas produced water, and waste water for beneficial use, and research on energy and water interdependencies.

1988-1996: Principal Member of the Technical Staff – Sandia National Laboratories

- Research, development, and demonstration of advanced environmental remediation technologies as program leader of the DOE's Innovative Treatment Remediation Demonstration Program.
- Design and testing of innovative conventional weapons technologies including geomechanics and explosives research and advanced structural mechanics modeling and analysis.

1979-1988: Member of the Technical Staff – Sandia National Laboratories

Design and prototype testing of innovative nuclear and conventional weapons technologies.
 Efforts included geomechanics research and testing and advanced structural mechanics modeling and analysis.

## RELEVANT SELECTED PUBLICATIONS

Hightower, M., et. al., "Risk Mitigation of LNG Ship Damage from Large Spills", LNG 17, Houston, Texas, April 2013.

Munoz, K, Baca, M., Hightower, M., et. al. "Soto Cano Air Base Energy Surety Evaluation and Conceptual Design Study", Sandia National Laboratories, Albuquerque, NM, March 2013.

Hightower, M., et. al., "Operational Risk Assessment of the Hadera Natural Gas Import Terminal", Sandia National Laboratories, June 2012.

Hightower, M., "Report to Congress – Liquefied Natural Gas Safety Research", Department of Energy, May 2012.

Luketa, A. and Hightower, M., "Hazards Assessment for the Proposed Hadera Liquefied Natural Gas Deepwater Port Project", SAND2012-4942, April 2012.

Schenkman, B., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for West Point", Sandia National Laboratories, Albuquerque, NM, March 2012.

Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for the Philadelphia Navy Yard", Sandia National Laboratories, Albuquerque, NM, November 2011.

Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for Cannon AFB New Mexico", Sandia National Laboratories, Albuquerque, NM, September 2011.

Hightower, M., "Energy Meets Water", ASME Magazine, pg. 34-39, July 2011.

Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for Kirtland AFB New Mexico", Sandia National Laboratories, Albuquerque, NM, May 2011.

Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for Ft. Belvoir Virginia, Sandia National Laboratories, Albuquerque, NM, April 2011.

Jensen, R., Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for Ft. Carson Colorado, Sandia National Laboratories, Albuquerque, NM, September 2010.

Baca, M., Hightower, M., "Energy Surety Microgrid (ESM) Conceptual Design for Ft. Bliss Texas, Sandia National Laboratories, Albuquerque, NM, August 2010.

Shrier, C., Hightower, M., "Towards Integrated Energy-Water Planning", Ground Water Protection Council, December 2009.

Hightower, M., "Energy Security – Addressing the Water Footprint", National Ground Water Association, June 2009.

Luketa, A., Hightower, M., Attaway, S., "Breach and Safety Analysis of Spills Over Water of Large Liquefied Natural Gas Carriers", SAND2008-3153, Sandia National Laboratories, May 2008.

Hightower, M. and Pearce, S., "The Energy Challenge", NATURE, March 20, 2008.

Hightower, M., "At the Crossroads – Emerging Energy Water Challenges", Southwest Hydrology, June 2007.

Pate, R., Hightower, M., et. al., "Overview of Energy-Water Interdependencies and the Emerging Energy Demands on Water Resources", Sandia National Laboratories, SAND 2007-1349C, March 2007.

Hightower, M., "Emerging Energy Demands on Water Resources", Water Resources Impact, Vol. 9, No. 1, American Water Resources Association, January 2007.

Cameron, C. and Hightower, M., "Report to Congress – Energy Demands on Water, Interdependencies of Energy and Water", Department of Energy, December 2006.

Hightower, M., "Inland Desalination – Issues and Challenges", Southwest Hydrology, April 2005.

Hightower, M., et.al., "Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water", SAND2004-6258, Sandia National Laboratories, December 2004.

Hightower, M., "Report to Congress – Conceptual Design of the Tularosa Basin National Inland Desalination Research Facility", Bureau of Reclamation, September 2003.

### **SYNERGISTIC ACTIVITIES**

- Chair ASME Environmental Engineering Division
- Member ASCE Desalination Working Group
- Member EPRI Energy Water Research Advisory Group
- Member, Board of Directors Citizens Alliance for Responsible Energy